

## CLAIMS:

Sub B1  
1. An isolated nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a protein or a derivative, homologue, analogue or mimetic thereof wherein said nucleic acid molecule is expressed in larger amounts in hypothalamus tissue of obese animals compared to lean animals.

SEQ ID NO: 2  
2. An isolated nucleic acid molecule according to claim 1 wherein the nucleic acid molecule encodes an amino acid sequence substantially as set forth in SEQ ID NO:2 or SEQ ID NO:14 or an amino acid sequence having at least 60% similarity to all or a part thereof or is a mimetic thereof or a nucleotide sequence capable of hybridizing to said nucleic acid molecule under low stringency conditions at 42°C.

Sub B2  
3. An isolated nucleic acid molecule according to claim 2 wherein said nucleic acid molecule comprises a nucleotide sequence substantially as set forth in SEQ ID NO:1 or SEQ ID NO:13 or a nucleotide sequence having at least about 30% similarity to all or part of SEQ ID NO:1 or SEQ ID NO:13 and/or is capable of hybridizing to SEQ ID NO:1 or SEQ ID NO:13 under low stringency conditions at 42°C.

4. An isolated nucleic acid molecule according to claim 3 having the identifying characteristics of the gene "beacon".

Sub B3  
5. An isolated nucleic acid molecule according to any one of claims 1 to 4 wherein the animal is a human or *Psammomys obesus*.

4 6. An isolated nucleic acid molecule according to claim 3<sup>2</sup> ligated or fused to a nucleic acid vector molecule.

7. An isolated protein or a derivative, homologue, analogue or mimetic thereof which is produced in a larger amount in hypothalamus tissue of obese animals compared to lean animals.

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8. An isolated protein according to claim 7 comprising an amino acid sequence substantially as set forth in SEQ ID NO:2 or SEQ ID NO:14 or an amino acid sequence having at least 30% similarity to all or part of SEQ ID NO:2 or SEQ ID NO:14.
9. An isolated protein according to claim 8 wherein said protein is encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:1 or SEQ ID NO:13 or a nucleotide sequence having at least 60% similarity to all or part of SEQ ID NO:1 or SEQ ID NO:13 and/or is capable of hybridizing to SEQ ID NO:1 or SEQ ID NO:13 under low stringency conditions at 42°C.
10. A composition comprising a protein according to any one of claims 7 to 9 or a derivative, homologue, analogue or mimetic thereof or an agonist or antagonist thereof together with one or more pharmaceutically acceptable carriers and/or diluents.
11. A method for treating a subject comprising administering to said subject a treatment effective amount of a protein according to any one of claims 7 to 9 or a derivative, homologue, analogue or mimetic thereof or a genetic sequence encoding same or an agonist or antagonist of said protein or genetic sequence for a time and under conditions sufficient to effect treatment.
12. A method according to claim 11 wherein the treatment is in respect of obesity, anorexia, weight maintenance, energy imbalance, diabetes, metabolic syndrome, dyslipidemia, hypertension and/or insulin resistance.
13. A method of treatment or preventing obesity in a subject, said method comprising administering to said subject an antagonist of beacon or *beacon* gene expression for a time and under conditions sufficient to reduce the levels of beacon in hypothalamus tissue in said subject.
14. An antibody to a protein according to any one of claims 7 to 9 or a derivative, homologue, analogue or mimetic of said protein.

15. An antibody according to claim 14 wherein the antibody is a monoclonal antibody.
16. Use of a protein as defined by any one of claims 7 to 9 or a genetic sequence as defined by any one of claims 1 to 6 in the manufacture of a medicament for the treatment of one or more of obesity, anorexia, energy imbalance or diabetes.
17. A method of detecting beacon or a derivative or homologue thereof in a biological sample, said method comprising contacting said biological sample with an antibody specific for beacon or its antigenic derivatives or homologues for a time and under conditions sufficient for a complex to form and then detecting said complex.
18. A method for detecting expression of *beacon* or its derivatives or homologues in a tissue sample from a subject, said method comprising detecting the presence or amount of *beacon* mRNA in said sample.
19. A method according to claim 17 or 18 for use in determining the risk of development of obesity, anorexia, energy imbalance, diabetes, metabolic syndrome, dyslipidemia, hypertension and/or insulin resistance